

YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT

1947 Gaillieo Court, Suite 103; Davis, CA 95618

Municipal Solid Waste Landfill Emission Evaluation

ENGINEER: Courtney Graham

FACILITY NAME: Recology Hay Road (formerly Norcal Waste Systems Hay Road Landfill)

LOCATION: The equipment is located at 6426 Hay Road in Vacaville. The equipment will not be located within 1,000 feet of a K-12 school and is not subject to the requirements of H&S 42301.6.

PROPOSAL: The source is proposing to modify P-85-06(a1) by:
 - replacing the existing carbon adsorption system with an enclosed landfill gas fired flare and new 1500 cfm blower;
 - increasing the total number of landfill gas collection wells to 100;
 - revising the landfill gas related parameters used without an increase in capacity;

Recology Hay Road (Recology) previously received an ATC to install an enclosed flare. They tested the flare and landfill gas on March 3, 2010 and the results subsequently showed non-compliance with C-10-07 condition #12, which limits the H₂S concentration of the landfill gas going into the flare. Recology has now requested to eliminate the H₂S limit and keep records to show compliance with the SO_x mass emission limits of the permit. Additionally, they have proposed to raise the SO_x mass emission limits to accommodate the higher H₂S in the landfill gas. The District will use ATC C-10-34 to supersede ATC C-10-07 (which superseded C-09-87).

PROCESS: Municipal Solid Waste (MSW) Landfill

The majority of the landfilling process consists of placing waste into active waste management cells that are covered daily with soil or chipped greenwaste. Once a cell is filled to capacity, it is covered with a final layer of soil and the waste is allowed to degrade naturally. In general, as the waste decomposes it produces landfill gases that contain large amounts of methane (CH₄) and carbon dioxide (CO₂), as well as, relatively small amounts of non-methane organic compounds (NMOC) and hazardous air pollutants (HAP's). Overtime these gases migrate upward through the waste cells and emitted as fugitive emissions. Conservatively, this evaluation assumes that all of the NMOC emissions are volatile organic compounds (VOC's). The gas collection system serves to capture and combust these gases.

The previous landfill control system consisted of three (3) 2,000 lb carbon canisters connected in series, and was installed to satisfy the requirements of the Water board.

FLOW DIAGRAM: See application.

EQUIPMENT: MSW landfill not to exceed a total maximum design capacity of 35.6 million cubic yards (17.0 million Mega-grams (Mg))

CONTROL EQUIPMENT: Negative pressure landfill gas collection system serving up to 100 collection wells (equipped with a 1500 CFM blower at 30 HP), routed to a 45.6 MMBtu/hr enclosed flare with a 0.6 second residence time

ATC # C-10-34
 PTO #
 SIC Code # 4953
 UTM E 601.7 km
 UTM N 4241.3 km

APPLICATION DATA:

<u>Design Parameters Summary</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Maximum Design Capacity =	17.0 million Mg	-	Applicant
Initial Year of Operation =	1964	IO	Applicant
Last Year of Known Acceptance =	2008	KO	District
Estimated Year of Closure =	2042	CO	District

<u>Waste Acceptance Limits</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Avg. Daily Limit =	1,200 tons MSW	WD	Applicant *
Maximum Daily Limit =	2,400 tons MSW	-	Applicant **
1st Quarter Limit =	108,000 tons MSW	-	WA * (90 days/quarter)
2nd Quarter Limit =	109,200 tons MSW	-	WA * (91 days/quarter)
3rd Quarter Limit =	110,400 tons MSW	-	WA * (92 days/quarter)
4th Quarter Limit =	110,400 tons MSW	-	WA * (92 days/quarter)
Max. Yearly Limit =	438,000 tons MSW	WY	WA * (365 days/year)
Max. Yearly Limit =	397,351 Mg/year	YM	WY / MG

* The seven day average daily limit according to the facility's solid waste permit.

** The maximum amount of waste that may be received per day according to the facility's solid waste permit.

<u>Gas Collection Parameters</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
LFG Collection Efficiency =	75.0 %	CE	AP-42, Section 2.4.4.2, (11/1998)

<u>Gas Control Parameters</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Max. Gas Collection Rate =	45.6 MMBtu/hr	BR	Applicant
Exhaust Stack Oxygen Content =	10.0 %	OE	Retained from Emission Eval. C-09-87 *
Minimum Flare Control Efficiency =	90.0 %	DE	Retained from Emission Eval. C-09-87 *

* Site specific operating parameters previously established in ATC emission evaluation C-09-87 (see file for contact information).

ASSUMPTIONS:

<u>Miscellaneous Data</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
1 Mega-gram (Mg) =	1,1023 tons	MG	District
Standard Molar Volume =	385 cubic feet/lb-mole	MV	District
NMOC Molecular Weight =	86.18 g/g-mole	MW	AP-42, Section 2.4, Equation-4 (11/1998)
Molecular Weight H ₂ S =	34.0 lb/lb-mole	MWh2s	District
Molecular Weight SO ₂ =	64.0 lb/lb-mole	MWso2	District

EMISSION FACTORS:

<u>Landfill Gas Analytical Data Summary</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Conventional Methane Generation Rate =	0.02 (unitless)	k	40 CFR, Section 60.754 *
Regulatory Default Methane Potential =	170.0 m ³ /Mg	Lo	40 CFR, Section 60.754
Uncorrected NMOC Concentration =	418.0 ppmv, as C ₆	NMOC	Retained from Emission Eval. C-08-41 **
Avg. Methane (CH ₄) Concentration =	572,759 ppmv	MC	Retained from Emission Eval. C-08-41 **
Avg. Carbon Dioxide (CO ₂) Concentration =	390,586 ppmv	CC	Retained from Emission Eval. C-08-41 **
Avg. Nitrogen Oxide (NO ₂) Concentration =	198,571 ppmv	NC	Retained from Emission Eval. C-08-41 **
Avg. Oxygen (O ₂) Concentration =	21,143 ppmv	OC	Retained from Emission Eval. C-08-41 **
Landfill Gas Higher Heating Value =	450 MMBtu/MMScf	HH	District
MSW Landfill Gas F-Factor =	9,570 Scf/MMBtu	FF	EPA Method 19, Table 19.2 (02/2000)
Landfill Gas Sulfur Content =	707.0 ppmv (as H ₂ S)	SC	March, 2010 source test results***

* Based on the average 30 year rainfall measurements, the Sacramento region receives an average of 17.52 inches of rain per year. As such, a methane constant value (k) of 0.02 will be used for this evaluation.

** Site specific operating parameters previously established in ATC emission evaluation C-08-41 (see file for contact information).

*** Site specific operating parameters as found in March 2010 source test under ATC C-10-07.

<u>EPA LandGEM Emission Summary</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
Max. Uncontrolled NMOC Generation Rate =	99.23 Mg/year	M _{NMOC}	Calculated for Calendar Year 2042 *
Max. Uncontrolled CH ₄ Generation Rate =	39,177,968 m ³ /year	Q _{CH4}	Calculated for Calendar Year 2042 *

* The landfill's total uncontrolled NMOC generation rate (in Mg/year) as calculated using the air-infiltration corrected NMOC concentration (C_{NMOC} below) in the LandGEM program Version 3.02 (released May 2005) (see attached calculations).

<u>Flare Combustion</u>	<u>Units</u>	<u>Formula Symbol</u>	<u>Reference</u>
VOC (as Hexane) =	31.4 ppmv @ 3% O ₂	EFv@3%	Retained from Emission Eval. C-09-87 *
CO =	0.200 lb/MMBtu	EFc	Retained from Emission Eval. C-09-87 *
NOx =	0.050 lb/MMBtu	EFn	Retained from Emission Eval. C-09-87 *
TSP/PM ₁₀ =	0.0168 lb/MMBtu	EFp	Retained from Emission Eval. C-09-87 **

* Site specific operating parameters previously established in ATC emission evaluation C-09-87 (see file for contact information).

* Site specific operating parameters previously established in ATC emission evaluation C-09-87 (see file for contact information). Assumes that 100% of combustion TSP is particulate matter with an aerodynamic diameter of 10 microns or less.

CALCULATIONS:

1. Determine the Maximum Fuel Usage for the Enclosed Flare:

Max. Hourly Fuel Limit = BR * (1/HH) =	0.101 MMScf/hour	<u>Formula Symbol</u> FH
Max. Daily Fuel Limit = BR * (1/HH) * (24 hours/day) =	2.432 MMScf/day	FD
Max. 1st Quarter Fuel Limit = FD * (90 days/quarter) =	218.9 MMScf/quarter	
Max. 2nd Quarter Fuel Limit = FD * (91 days/quarter) =	221.3 MMScf/quarter	
Max. 3rd Quarter Fuel Limit = FD * (92 days/quarter) =	223.7 MMScf/quarter	
Max. 4th Quarter Fuel Limit = FD * (92 days/quarter) =	223.7 MMScf/quarter	
Max. Yearly Fuel Limit = FD * (365 days/year) =	887.7 MMScf/year	

2. Determine Standard Exhaust Flow for the Enclosed Flare:

Dry Standard Exhaust Flow Rate = BR * FF * (1 hour/60 min) =	7,273 dscfm	<u>Formula Symbol</u> SCFM
--	-------------	-------------------------------

3. Determine Exhaust Concentrations at Actual Flow Conditions:

VOC at Actual Flow Rate = EFv@3% * (20.9% - EO) / (20.9% - 3%) =	19.1 ppmv (actual)	<u>Formula Symbol</u> EFv
--	--------------------	------------------------------

EMISSION CALCULATIONS:

1. Determine Ratio of Nitrogen to Oxygen Observed in Landfill Gas Testing:

$$\text{Ratio of NO}_2 : \text{O}_2 = \text{NC} / \text{OC} = 9 \text{ (unitless)}$$

2. Determine Air-Infiltration Corrected NMOC Concentration for Use in LandGEM Program:

$$\text{Air-infiltration Corrected NMOC Concentration} = (\text{NMOC} * 10^6) / (\text{CC} + \text{MC} + \text{NC} + \text{OC}) = 353.3 \text{ ppm}^*$$

* Per AP-42, Section 2.4, Equation-2 (11/1998), because the ratio of NO₂ to O₂ is greater than 4, Equation-2 requires that the air infiltration correction equation also be adjusted for the concentration of nitrogen. As such, the calculated NMOC concentration (C_{NMOC}) has been corrected for nitrogen.

3. Determine the Maximum Fugitive VOC* Emissions From Landfill:

Max. Daily VOC Emissions = M _{NMOC} * MG * (2,000 lbs/ton) * (1 year/365 days) * (100% - CE) =	149.8 lbs/day	Formula Symbol MD
Max. 1st Quarter VOC Emissions = MD * (90 days/quarter) =	13,485 lbs/quarter	
Max. 2nd Quarter VOC Emissions = MD * (91 days/quarter) =	13,635 lbs/quarter	
Max. 3rd Quarter VOC Emissions = MD * (92 days/quarter) =	13,785 lbs/quarter	
Max. 4th Quarter VOC Emissions = MD * (92 days/quarter) =	13,785 lbs/quarter	
Max. Yearly VOC Emissions = M _{NMOC} * MG * (100% - CE) =	27.35 tons/year	

* For permitting purposes, the NMOC emissions will be conservatively assumed to be 100% VOC.

4. Determine the Maximum Combustion Emissions:

VOC Emissions:		Formula Symbol VD
Max. Daily VOC Emissions = EF _V * (10 ⁻⁶) * MW * (1/MV) * SCFM * (1,440 min/day) =	44.8 lb/day	
1st Quarter VOC Emissions = VD * (90 days/quarter) =	4,034 lb/quarter	
2nd Quarter VOC Emissions = VD * (91 days/quarter) =	4,079 lb/quarter	
3rd Quarter VOC Emissions = VD * (92 days/quarter) =	4,124 lb/quarter	
4th Quarter VOC Emissions = VD * (92 days/quarter) =	4,124 lb/quarter	
Max. Yearly VOC Emissions = VD * (365 days/year) * (1 ton/2,000 lb) =	8.18 tons/year	

CO Emissions:		Formula Symbol CD
Max. Daily CO Emissions = BR * EF _C * (24 hours/day) =	218.9 lb/day	
1st Quarter CO Emissions = CD * (90 days/quarter) =	19,699 lb/quarter	
2nd Quarter CO Emissions = CD * (91 days/quarter) =	19,918 lb/quarter	
3rd Quarter CO Emissions = CD * (92 days/quarter) =	20,137 lb/quarter	
4th Quarter CO Emissions = CD * (92 days/quarter) =	20,137 lb/quarter	
Max. Yearly CO Emissions = CD * (365 days/year) * (1 ton/2,000 lb) =	39.95 tons/year	

NOx Emissions:		Formula Symbol ND
Max. Hourly NOx Emissions = BR * EF _N =	2.3 lb/hour	
Max. Daily NOx Emissions = BR * EF _N * (24 hours/day) =	54.7 lb/day	
1st Quarter NOx Emissions = ND * (90 days/quarter) =	4,925 lb/quarter	
2nd Quarter NOx Emissions = ND * (91 days/quarter) =	4,980 lb/quarter	
3rd Quarter NOx Emissions = ND * (92 days/quarter) =	5,034 lb/quarter	
4th Quarter NOx Emissions = ND * (92 days/quarter) =	5,034 lb/quarter	
Max. Yearly NOx Emissions = ND * (365 days/year) * (1 ton/2,000 lb) =	9.99 tons/year	

SOx Combustion Emissions:		Formula Symbol SD
Max. Hourly SOx Ems. = FH * SC * (MW _{H2S} /MV) * (MW _{SO2} /MW _{H2S}) =	11.9 lb/hour	
Max. Daily SOx Emissions = proposed by applicant =	150.0 lb/day	
1st Quarter SOx Emissions = proposed by applicant =	13,600 lb/quarter	
2nd Quarter SOx Emissions = proposed by applicant =	13,600 lb/quarter	
3rd Quarter SOx Emissions = proposed by applicant =	13,600 lb/quarter	
4th Quarter SOx Emissions = proposed by applicant =	13,600 lb/quarter	
Max. Yearly SOx Emissions = SD * (365 days/year) * (1 ton/2,000 lb) =	27.20 tons/year	

TSP/PM ₁₀ Emissions:		Formula Symbol PH PD
Max. Hourly TSP/PM ₁₀ Emissions = BR * EF _P =	0.8 lb/hour	
Max. Daily TSP/PM ₁₀ Emissions = BR * EF _P * (24 hours/day) =	18.4 lb/day	
1st Quarter TSP/PM ₁₀ Emissions = PD * (90 days/quarter) =	1,655 lb/quarter	
2nd Quarter TSP/PM ₁₀ Emissions = PD * (91 days/quarter) =	1,673 lb/quarter	
3rd Quarter TSP/PM ₁₀ Emissions = PD * (92 days/quarter) =	1,692 lb/quarter	
4th Quarter TSP/PM ₁₀ Emissions = PD * (92 days/quarter) =	1,692 lb/quarter	
Max. Yearly TSP/PM ₁₀ Ems. = PD * (365 days/year) * (1 ton/2,000 lb) =	3.36 tons/year	

5. Determine the Enclosed Flare's Particulate Matter Emission Concentration:

$$\text{PM Conc.} = \text{PH} * (7,000 \text{ grains/lb}) * (1 \text{ hour/60 min}) * (1 / \text{SCFM}) = 0.0123 \text{ gr/dscf}$$

6. Determine the Enclosed Flare's SOx Emission Concentration:

$$\text{SOx \%} = \text{SH} * \text{MV} * (1/\text{MW}_{\text{SO2}}) * (1 \text{ hour/60 min.}) * (1 / \text{SCFM}) * 100\% = 0.0164 \%$$

7. Determine the Total VOC Emissions:

Total VOC Emissions:	
Max. Daily VOC Emissions = [Fugitive Landfill] + [Flare] =	194.7 lb/day
1st Quarter VOC Emissions = [Fugitive Landfill] + [Flare] =	17,520 lb/quarter
2nd Quarter VOC Emissions = [Fugitive Landfill] + [Flare] =	17,714 lb/quarter
3rd Quarter VOC Emissions = [Fugitive Landfill] + [Flare] =	17,909 lb/quarter
4th Quarter VOC Emissions = [Fugitive Landfill] + [Flare] =	17,909 lb/quarter
Max. Yearly VOC Emissions = [Fugitive Landfill] + [Flare] =	35.53 tons/year

RULE & REGULATION COMPLIANCE EVALUATION:

District Rule 2.3-Ringelmann Chart

The source is subject to the requirements of this rule (amended 01/13/2009). Per the requirements of Section 301.1 and Section 301.2, the visible emissions from the operation are expected to comply with 20% opacity limit.

District Rule 2.5-Nuisance

The source is subject to the requirements of this rule. The rule limits the discharge of any air contaminant which causes a nuisance to the public. The source is expected to comply with the rule because their solid waste permit requires specific waste handling practices that are meant to minimize the potential for nuisance. A condition to meet the rule will not be included in the ATC, but will be included in the PTO upon implementation.

District Rule 2.11-Particulate Matter

The flare is subject to the requirements of this rule (revised 01/13/2010). As shown below, the unit's particulate emissions comply with the rule's concentration limit.

	<u>PM Emission Rate</u>	<u>Allowable Rate</u>	<u>Compliance</u>
Combustion Exhaust =	0.0123 gr/scf	0.1 gr/scf	Yes

District Rule 2.12 Section A-Sulfur Compounds

The flare is subject to the requirements of this rule (revised 01/13/2010). As shown below, the unit's sulfur emissions comply with the rule's concentration limit.

	<u>SOx Emission Rate</u>	<u>Allowable Rate</u>	<u>Compliance</u>
Combustion Exhaust =	0.0164 %	0.2 %	Yes

District Rule 2.16-Fuel Burning or Power Generation

The flare is subject to the requirements of this rule. As shown below, the unit's hourly emissions comply with the rule's pollutant specific emissions rate limits.

	<u>Actual Emission Rate</u>	<u>Allowable Rate</u>	<u>Compliance</u>
NOx =	2.3 lb/hr	140 lb/hr	Yes
SOx =	11.9 lb/hr	200 lb/hr	Yes
TSP =	0.8 lb/hr	40 lb/hr	Yes

District Rule 2.19-Particulate Matter Process Emission Rate

The source is not subject to the requirements of this rule, since the landfill gas collected and combusted by the system does not meet the definition of "process weight per hour" in Rule 1.1, Section 225.

District Rule 2.38-Standards for Municipal Solid Waste Landfills

The source is not subject to the requirements of this rule. Per the requirements of Section 103.1 any landfill subject to the requirements of Subpart WWW (see below), is exempt from the requirements of this rule.

District Rule 3.4-New Source Review

It should be noted that two different stationary sources currently operate at the Hay Road Landfill:

- > Recology Hay Road, which operates the MSW municipal landfill (under P-85-06(a1)), an emergency internal combustion (IC) engine (under P-86-06), the petroleum contaminated soil usage operation (under P-64-00), and the gasoline dispensing facility (under P-28-98). The facility is operating under the Standard Industrial Classification Code (SIC Code): 4953 - Refuse Systems.
- > Jepson Prairie Organics Compost Facility (Jepson Prairie), which operates an organic composting operation (under P-61-07(a1)), two electric trommel screens (under P-24-00(a) and P-4-06(a2)), and an IC engine powered trommel screen (under P-34-00(a)). The facility is operating under the SIC Code: 2875 - Fertilizers, Mixing Only.

As defined in Rule 3.4, Section 238, a stationary source includes all permitted emission units that: 1) belong to same industrial grouping, 2) are located on one property (or on two contiguous properties), and 3) are under the same or common ownership, operation, or control. Although the Recology and Jepson Prairie operations are under common ownership and control, the two facilities do not belong to same industrial grouping. As such, the District considers the Recology and the Jepson Prairie operations to be separate stationary sources operating at the same location.

PROPOSED EMISSION SUMMARY FOR NEW OR MODIFIED PERMIT

	<u>Daily</u>	<u>Yearly</u>	
VOC	194.7 lb	35.53 tons	Use for annual billing
CO	218.9 lb	39.95 tons	Use for annual billing
NOx	54.7 lb	9.99 tons	Use for annual billing
SOx	150.0 lb	27.20 tons	Use for annual billing
PM10	18.4 lb	3.36 tons	Use for annual billing

	<u>Quarterly</u>			
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	17,520	17,714	17,909	17,909
CO (lb)	19,699	19,918	20,137	20,137
NOx (lb)	4,925	4,980	5,034	5,034
SOx (lb)	13,600	13,600	13,600	13,600
PM10 (lb)	1,655	1,673	1,692	1,692

Previous quarterly potential to emit for modified permit*

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	17,531	17,726	17,920	17,920
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

* Emissions from PTO P-85-06(a1) (issued 05/12/2009). Please note that although the landfill's previously permitted emission limits were calculated using the EPA's LandGEM program, a growth factor of 4% was applied to the future disposal rates. Per recent comments made by EPA on a similar landfill project, the District has re-evaluated the landfill's previous PTE by using the maximum permitted disposal rate as the future "unknown" rate. As such, the revised closure date for the landfill has moved up from 2053 (see ATC emission evaluation C-08-41) to 2042 (see LandGEM Summary for P-85-06(a1) attached to ATC emission evaluation C-09-87). Since this revision has been performed in order to reflect the "best available science", the revised emissions of P-85-06(a1) are not subject to New Source Review requirements.

Historic potential emissions for modified permit*

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	17,531	17,726	17,920	17,920
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

* Section 220 of Rule 3.4 defines "historical potential emissions" (HPE) as the emissions of a unit prior to a modification based on the emission limits listed in the unit's previous Authority to Construct (ATC) or Permit to Operate (PTO). Section 220 also states that emission limitations are treated as part of an emission unit's design only if the limitations are representative of "normal operations". Lastly, Section 220 specifies that "normal operation" is the usual or typical operation of an emissions unit resulting in "actual emissions" which are at least 80% of the specific limits contained in the unit's previous ATC or PTO.

In determining the PTE for landfills, LandGEM uses the amount of waste-in-place for each year as one of the variables to calculate emissions. Therefore, for the purposes of determining whether the limitations are representative of normal operations, the District will check whether the source has had any one year out of the last five where the actual waste-in-place amounts came within 80% of the projected amounts entered in LandGEM.

The highest amount of waste landfilled at the site in a single year over the last five operating years (2005 - 2009) was 150,543 tons in 2007, which represents a 7.5% increase in the total amount of waste-in place. The average amount of waste landfilled during this five year period was 151,360 tons, which represents an average increase in waste of 6.8%. As such, the District considers that the landfill's acceptance rate has not significantly changed over the baseline and is operating within 80% of it's projected capacity. Therefore, the District will set the site's historic PTE equal to the previous PTE.

<u>Pollutant</u>	<u>Trigger</u> (lb/day)	<u>BACT</u>	<u>Quarterly Increase</u>	<u>BACT</u>
		<u>Proposed</u> (lb/day)		
VOC	10	195	No	No
CO	250	219	Yes	No
NOx	10	55	Yes	Yes
SOx	80	150	Yes	Yes
PM10	80	18	Yes	No

OFFSETS

Quarterly permitted emissions for other permits at the stationary source*

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	6,505	6,505	6,505	6,505
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	402	402	402	402

* Per Policy 25, the calculated post-project PTE for all other permitted units not including the emergency-use IC engines (see Quarterly PTE worksheet revised 11/01/2010).

Quarterly permitted emissions for the stationary source including proposed emissions

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	24,025	24,219	24,414	24,414
CO (lb)	19,699	19,918	20,137	20,137
NOx (lb)	4,925	4,980	5,034	5,034
SOx (lb)	13,600	13,600	13,600	13,600
PM10 (lb)	2,057	2,075	2,094	2,094

* Not including the emergency engine of PTO P-86-06.

Offset triggers

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	7,500	7,500	7,500	7,500
CO (lb)	49,500	49,500	49,500	49,500
NOx (lb)	7,500	7,500	7,500	7,500
SOx (lb)	13,650	13,650	13,650	13,650
PM10 (lb)	13,650	13,650	13,650	13,650

Quantity of offsets required

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
VOC (lb)	0	0	0	0
CO (lb)	0	0	0	0
NOx (lb)	0	0	0	0
SOx (lb)	0	0	0	0
PM10 (lb)	0	0	0	0

MAJOR MODIFICATION

Facility Total Potential to Emit *

48.55 TPY VOC
39.97 TPY CO
10.12 TPY NOx
27.21 TPY SOx
4.18 TPY PM10

Major Source Thresholds

25 TPY VOC
100 TPY CO
25 TPY NOx
100 TPY SOx
100 TPY PM10

* See Quarterly PTE worksheet (revised 11/01/2010).

Last five year emission aggregate *

11.41 TPY VOC
39.97 TPY CO
10.12 TPY NOx
27.21 TPY SOx
3.36 TPY PM10

Major Modification Thresholds

25 TPY VOC
100 TPY CO
25 TPY NOx
40 TPY SOx
25 TPY PM10

* See Five-Year Aggregate worksheet (revised 11/01/2010).

Result: The proposed modification is not a major modification

PUBLIC NOTICE

"Increase in historic potential to emit"

-11 lb VOC/quarter
20,137 lb CO/quarter
5,034 lb NOx/quarter
13,600 lb SOx/quarter
1,692 lb PM10/quarter

Exemption level for notification

7,500 lb VOC/quarter
49,500 lb CO/quarter
7,500 lb NOx/quarter
13,650 lb SOx/quarter
13,650 lb PM10/quarter

Result: Public notice is not required

District Rule 3.20-Ozone Transport Mitigation

As documented above, the facility total PTE is above 10 tons per year for VOC or NOx, and therefore the post-project Stationary Source Potential to Emit (SSPE) will be calculated.

Annual permitted emissions for the stationary source including proposed emissions

VOC (lb)	97,092	lbs
NOx (lb)	20,244	lbs

Annual permitted emissions for equipment which is exempt from Rule 3.4*

VOC (lb)	20	lbs
NOx (lb)	271	lbs

* From PTO P-86-06 (Emergency IC Engine).

Post-project Stationary Source Potential to Emit (SSPE)

VOC (lb)	97,072	lbs
NOx (lb)	19,973	lbs

Because the post-project SSPE is greater than 10 tons (20,000) lbs per year for VOC or NOx, per section 301.1, calculations shall be performed to determine the quantity of mitigation required, if any.

Pre-project Stationary Source Potential to Emit (SSPE)

VOC (lb)	94,795	lbs
NOx (lb)	0	lbs

Quantity of offsets required by Rule 3.4

VOC (lb)	0	lbs
NOx (lb)	0	lbs

Quantity of Mitigation required by Rule 3.20*

VOC (lb)	2,277	lbs
NOx (lb)	0	lbs

*This permitted increase is due to a change in calculational methodology within the LandGem software that was required by EPA, therefore mitigation will not be required since this was not an actual emissions increase.

District Rule 3.8-Federal Operating Permits

The source is subject to the rule pursuant to Section 102.5, and is operating under a valid Title V permit. For reference, Section 102.5 requires that sources subject to Section 111 of the Federal Clean Air Act (CAA) comply with this rule. Specifically, Section 111(d) of the CAA required California to submit a State Plan that identified and established performance standards for existing sources of significant amounts of air pollution. California's State Plan was promulgated as 40 CFR Part 62, Subpart F (Part 60.1115-62.1130), which requires that existing MSW landfills (for which construction, reconstruction, or modification was commenced before May 30, 1991) comply with the provisions of 40 CFR Part 60, Subpart Cc. Although the facility is no longer subject to Subpart Cc, it is still subject to the Title V requirements.

The facility's current Title V permit F-01059-4 was issued on May 12, 2009, and the last set of amendments were proposed as Title V permit F-01059-5 (proposed on September 17, 2009). As previously requested by the source, proposed Title V permit F-01059-5 and ATC C-09-87 were processed under the provisions of Enhanced New Source Review (concurrent noticing periods). The 30-day public notice was published on September 21, 2009, in the Vacaville Reporter newspaper (see file) with no comments being received during the comment period. The Title V permit amendment notices were mailed to EPA and CARB on September 17, 2009. The 45-day regulatory comment period ended on November 5, 2009, with no comments being received from either agency. As such, ATC C-09-87 and proposed Title V permit F-01059-5 were issued as proposed (see Addendum dated 11/05/2009).

The District then performed a re-evaluation in order to administratively increase the startup period to 90 days with no other changes in the previously noticed conditions, the District did not re-notice the evaluation under enhanced NSR. The District did not consider the startup period amendment to be a relaxation of an operating standard, since the 45 day startup period is not specifically required by a District Rule or a Federal Regulation. Although the 45 day startup period is listed in Title V Condition 59, the District believes that the inclusion of the startup testing requirement in the proposed Title V permit was in error because these types of initial startup conditions are typically stricken from the final operating permits upon their issuance. ATC C-10-07 superceded ATC C-09-87.

After C-10-07 was issued, the initial source test was completed on March 3, 2010 and it was found that the source was not in compliance with the H2S limit on condition 12 of the ATC (condition 9 of the proposed Title V permit). The facility has now applied (C-10-34) to perform regular checks of the H2S in the fuel by draeger tube and use the results to calculate actual emissions of SOx from the flare. The applicant has applied to increase the SOx mass emissions limits to accommodate the increase H2S content of the gas. Showing compliance with the SOx mass emissions limits will replace the condition with an H2S limit on the fuel. Since the flare installation and limits were already noticed under C-09-87 (with the exception of the increase in SOx needed with this ATC), this amendment will be processed as a minor modification.

District Risk Management Plan and Risk Assessment Guidelines

The applicant proposes to replace the existing carbon control system with an enclosed flare. Since the source is not proposing to increase the landfill's capacity, NMOC or CH₄ concentrations, or a decrease in the collection and control efficiencies of the modified control system, the District does not expect an increase in the site's hazardous air pollutants (HAPs) emissions as a result of this application. As such, the District will evaluate the HAP generation and emission rates for the site for the purposes of determining the requirements of 40 CFR Part 63, Subpart AAAA (Municipal Solid Waste Landfills) - see below.

1. All Constituents Present in Uncontrolled Landfill Gas Produced by the Landfill:

Pollutant Prioritization ^a	CAS Number	Clean Air Act Listed HAP ^b	RMPRAG Listed HAP ^c	LandGEM Output for Calendar Year 2042	
		(Yes / No)	(Yes / No)	(Mg/yr)	(lb/yr)
1,1,1-Trichloroethane (methyl chloroform) =	71556	Yes	Yes	0.2087	460
1,1,2,2-Tetrachloroethane =	79345	No	No	0.6017	1,327
1,1-Dichloroethane (ethylidene dichloride) =	75343	Yes	No	0.7741	1,707
1,1-Dichloroethene (vinylidene chloride) =	75354	Yes	Yes	0.0632	139
1,2-Dichloroethane (ethylene dichloride) =	107062	Yes	Yes	0.1322	292
1,2-Dichloropropane (propylene dichloride) =	78875	Yes	No	0.0663	146
2-Propanol (isopropyl alcohol) =	67630	No	Yes	9.7951	21,594
Acetone =	-	No	No	1.3250	2,921
Acrylonitrile =	107131	Yes	Yes	1.0894	2,402
Benzene (No Co-disposal) ^d =	71432	Yes	Yes	0.4837	1,066
Benzene (Co-disposal) =	HIDE	No	No	2.8002	6,173
Bromodichloromethane =	75274	No	No	1.6552	3,649
Butane =	-	No	No	0.9471	2,088
Carbon disulfide =	75150	Yes	Yes	0.1439	317
Carbon monoxide =	42101	No	No	12.7800	28,175
Carbon tetrachloride =	56235	Yes	Yes	0.0020	4.4
Carbonyl sulfide =	463581	Yes	No	0.0959	211
Chlorobenzene =	108907	Yes	Yes	0.0917	202
Chlorodifluoromethane =	75456	No	No	0.3664	808
Chloroethane (ethyl chloride) =	75003	Yes	No	0.2734	603
Chloroform =	67663	Yes	Yes	0.0117	25.7
Chloromethane (methyl chloride) =	74873	Yes	No	0.1975	435
Dichlorobenzene =	25321226	No	Yes	0.1006	222
Dichlorodifluoromethane =	-	No	No	6.3048	13,900
Dichlorofluoromethane =	75434	No	No	0.8721	1,923
Dichloromethane (methylene chloride) =	75092	Yes	No	3.8755	8,544
Dimethyl sulfide (methyl sulfide) =	-	No	No	1.5794	3,482
Ethane =	-	No	No	87.2195	192,284
Ethanol =	-	No	No	4.0548	8,939
Ethyl mercaptan (ethanethiol) =	-	No	No	0.4657	1,027
Ethyl benzene =	100414	Yes	Yes	1.5915	3,509
Ethylene dibromide (Dibromoethane) =	106934	Yes	Yes	0.0006	1.35
Fluorotrichloromethane =	-	No	No	0.3403	750
Hexane =	110543	Yes	Yes	1.8537	4,087
Hydrogen =	-	No	No	3.9985	8,815
Mercury (total) =	7439976	Yes	Yes	0.00019	0.42
Methyl ethyl ketone =	78933	Yes	Yes	1.6686	3,679
Methyl isobutyl ketone =	108101	Yes	No	0.6202	1,367
Methyl mercaptan =	-	No	No	0.3920	864
Pentane =	-	No	No	0.7760	1,711
Perchloroethylene (tetrachloroethylene) =	127184	Yes	Yes	1.9997	4,408
Propane =	-	No	No	1.5806	3,485
t-1,2-dichloroethene =	-	No	No	0.8846	1,950
Toluene (No Co-disposal) ^d =	108883	Yes	Yes	11.7100	25,816
Toluene (Co-disposal) =	HIDE	No	No	51.0434	112,530
Trichloroethylene (trichloroethene) =	79016	Yes	Yes	1.1991	2,643
Vinyl chloride =	75014	Yes	Yes	1.4869	3,278
Xylenes =	1330207	Yes	Yes	4.1518	9,153

^a Landfill gas constituent molar weight and default concentrations listed in AP-42, Section 2.4, Table 2.4-1 and Table 2.4-2 (11/1998).

^b This column indicates whether the listed constituent is a HAP contained in the Federal Clean Air Act.

^c This column indicates whether the listed constituent is a HAP contained in the District's RMPRAG.

^d Per the LandGEM - Ver. 3.02 User's Guide, Section 3.3 (Page 17), the "No or Unknown Co-disposal" values for benzene and toluene should be used if the landfill has not co-disposed of hazardous waste with the MSW. Since the site's corrected NMOC concentration value of 353.3 ppmv is lower than the default NMOC value of 600 ppmv, the District will use the "No or Unknown Co-disposal" HAP values instead of the higher "Co-disposal" HAP amounts.

2. Fugitive Emission of Listed HAPs from the Landfill in the Year 2042:

The landfill is served by the active gas collection system and has been evaluated to have an overall gas collection efficiency of 75% and an expected landfill gas control efficiency of 90%. The following are the total landfill emissions.

Pollutant Prioritization ^a	CAS Number	Total Landfill HAP Emissions [Fugitive and Flare]		
		(lb/hr)	[HAP _{yr}] (lb/year)	(ton/year)
1,1,1-Trichloroethane (methyl chloroform) =	71556	1.71E-02	150	0.0748
1,1,2,2-Tetrachloroethane =	79345	-	-	-
1,1-Dichloroethane (ethylidene dichloride) =	75343	6.33E-02	555	0.277
1,1-Dichloroethene (vinylidene chloride) =	75354	5.17E-03	45.3	0.0226
1,2-Dichloroethane (ethylene dichloride) =	107062	1.08E-02	94.7	0.0474
1,2-Dichloropropane (propylene dichloride) =	78875	5.42E-03	47.5	0.0237
2-Propanol (isopropyl alcohol) =	67630	8.01E-01	7,018	3.51
Acetone =	-	-	-	-
Acrylonitrile =	107131	8.91E-02	781	0.390
Benzene (No Co-Disposal) =	71432	3.96E-02	347	0.173
Benzene (Co-Disposal) =	71432	-	-	-
Bromodichloromethane =	75274	-	-	-
Butane =	-	-	-	-
Carbon disulfide =	75150	1.18E-02	103	0.0516
Carbon monoxide =	42101	-	-	-
Carbon tetrachloride =	56235	1.64E-04	1.44	0.0007
Carbonyl sulfide =	463581	7.85E-03	68.7	0.0344
Chlorobenzene =	108907	7.50E-03	65.7	0.0329
Chlorodifluoromethane =	75456	-	-	-
Chloroethane (ethyl chloride) =	75003	2.24E-02	195.9	0.0979
Chloroform =	67663	9.55E-04	8.36	0.0042
Chloromethane (methyl chloride) =	74873	1.62E-02	141.5	0.0707
Dichlorobenzene =	25321226	8.23E-03	72.1	0.0360
Dichlorodifluoromethane =	-	-	-	-
Dichlorofluoromethane =	75434	-	-	-
Dichloromethane (methylene chloride) =	75092	3.17E-01	2,777	1.39
Dimethyl sulfide (methyl sulfide) =	-	-	-	-
Ethane =	-	-	-	-
Ethanol =	-	-	-	-
Ethyl mercaptan (ethanethiol) =	-	-	-	-
Ethyl benzene =	100414	1.30E-01	1,140	0.570
Ethylene dibromide (Dibromoethane) =	106934	5.01E-05	0.439	0.0002
Fluorotrichloromethane =	-	-	-	-
Hexane =	110543	1.52E-01	1,328	0.664
Hydrogen =	-	-	-	-
Mercury (total) ^b =	7439976	4.77E-05	0.418	0.0002
Methyl ethyl ketone =	78933	1.36E-01	1,196	0.598
Methyl isobutyl ketone =	108101	5.07E-02	444	0.222
Methyl mercaptan =	-	-	-	-
Pentane =	-	-	-	-
Perchloroethylene (tetrachloroethylene) =	127184	1.64E-01	1,433	0.716
Propane =	-	-	-	-
Toluene (No Co-Disposal) =	108883	9.58E-01	8,390	4.20
Trichloroethylene (trichloroethene) =	79016	9.81E-02	859	0.430
Vinyl chloride =	75014	1.22E-01	1,065	0.533
Xylenes =	1330207	3.40E-01	2,975	1.487
Maximum Yearly Single Fugitive HAP Emission Rate in 2042 (tons/year) =				4.20
Maximum Yearly Fugitive HAPS Emission Rate in 2042 (tons/year) =				15.65

^a Only emissions from the landfill gas constituents contained in the Federal CCA or the District's RMPRAG have been evaluated.

^b Per AP-42, Table 2.4-3, footnote (b), zero destruction associated with the combustion of mercury in any landfill gas control devices.

3. Final HAP Emission for all Collocated Facilities Including the Landfill:

For the purposes of 40 CFR Part 63, Subpart AAAAA (Municipal Solid Waste Landfills), the following table lists the total HAP emissions currently permitted for the other facility collocated at the landfill, as well as other permitted equipment operated by Yolo County. The emission totals will be used in the applicability determination of Subpart AAAAA. As previously discussed, Jepson Prairie is collocated to the landfill and the only process emitting HAPs is a non-emergency diesel fired IC engine that is equipped with a diesel particulate filter.

As summarized below, the highest quantity of any single HAP emitted annually at the landfill is 4.20 tons (Toluene), while the total amount of HAPs emitted from all of the collocated facilities is 15.65 tons.

Pollutant Prioritization	CAS Number	Jepson Prairie Organics	Norcal Waste		Total Speciated HAP Emissions (tons/year)
		P-34-00(a): Limited Use Diesel Fired Engine Driving a Trommel Screen (tons/year)	P-86-06: Emergency Diesel Engine (tons/year)	C-10-07: Landfill Emissions (tons/year)	
1,1,1-Trichloroethane (methyl chloroform) =	71556	-	-	0.0748	0.0748
1,1-Dichloroethane (ethylidene dichloride) =	75343	-	-	0.277	0.277
1,1-Dichloroethene (vinylidene chloride) =	75354	-	-	0.0226	0.0226
1,2-Dichloroethane (ethylene dichloride) =	107062	-	-	0.0474	0.0474
1,2-Dichloropropane (propylene dichloride) =	78875	-	-	0.0237	0.0237
2-Propanol (isopropyl alcohol) =	67630	-	-	3.51	3.51
Acetaldehyde =	75070	0.0004	0.00003	-	0.0004
Acrolein =	107028	0.00005	0.000003	-	0.00005
Acrylonitrile =	107131	-	-	0.390	0.390
Benzene =	71432	0.0005	0.0001	0.173	0.174
1,3-Butadiene =	106990	0.00002	0.0000000	-	0.00002
Carbon disulfide =	75150	-	-	0.0516	0.0516
Carbon tetrachloride =	56235	-	-	0.0007	0.0007
Carbonyl sulfide =	463581	-	-	0.0344	0.0344
Chlorobenzene =	108907	-	-	0.0329	0.0329
Chloroethane (ethyl chloride) =	75003	-	-	0.0979	0.0979
Chloroform =	67663	-	-	0.00418	0.00418
Chloromethane (methyl chloride) =	74873	-	-	0.0707	0.0707
Dichlorobenzene =	25321226	-	-	0.0360	0.0360
Dichlorodifluoromethane =	-	-	-	-	0.0000
Dichlorofluoromethane =	75434	-	-	-	0.0000
Dichloromethane (methylene chloride) =	75092	-	-	1.39	1.39
Dimethyl sulfide (methyl sulfide) =	-	-	-	-	0.0000
Ethane =	-	-	-	-	0.0000
Ethanol =	-	-	-	-	0.0000
Ethyl mercaptan (ethanethiol) =	-	-	-	-	0.0000
Ethyl benzene =	100414	-	-	0.570	0.570
Ethylene dibromide (Dibromoethane) =	106934	-	-	0.0002	0.0002
Fluorotrichloromethane =	-	-	-	-	0.0000
Formaldehyde =	50000	0.0006	0.00001	-	0.0007
Hexane =	110543	-	-	0.664	0.664
Hydrogen chloride =	-	-	-	-	0.0000
Hydrogen =	-	-	-	-	0.0000
Mercury (total) =	7439976	-	-	0.0002	0.0002
Methyl ethyl ketone =	78933	-	-	0.598	0.598
Methyl isobutyl ketone =	108101	-	-	0.222	0.2222
Methyl mercaptan =	-	-	-	-	0.0000
Unspeciated PAHs =	-	-	-	-	-
PAH - Benzo(a)anthracene =	-	0.000001	0.0000001	-	0.000001
PAH - Benzo(a)pyrene =	50328	0.0000001	0.0000000	-	0.0000001
PAH - Benzo(b)fluoranthene =	205992	0.0000001	0.0000000	-	0.0000001
PAH - Benzo(k)fluoranthene =	207089	-	-	-	-
PAH - Dibenz(a,h)anthracene =	-	0.0000003	0.0000000	-	0.0000003
PAH - Indeno[1,2,3-cd]pyrene =	193395	0.0000002	0.0000000	-	0.0000002
PAH - Naphthalene =	91203	0.00005	0.0000010	-	0.00005
Pentane =	-	-	-	-	0.00000000
Perchloroethylene (tetrachloroethylene) =	127184	-	-	0.716	0.716
Propane =	-	-	-	-	0.0000
Propylene =	115071	0.0014	0.0000000	-	0.0014
t-1,2-dichloroethene =	-	-	-	-	0.0000
Toluene =	108883	0.0002	0.0000000	4.20	4.20
Trichloroethylene (trichloroethene) =	79016	-	-	0.430	0.430
Vinyl chloride =	75014	-	-	0.533	0.533
Xylenes =	1330207	0.0002	0.00000	1.49	1.49
Max. Single HAP Yearly Emission Rate (tons/year) =		0.001	0.0001	4.20	4.20
Max. HAPS Yearly Emission Rate (tons/year) =		0.003	0.0001	15.65	15.65

District Rule 8.1-New Source Performance Standards

This rule adopts by reference the Federal New Source Performance Standards (NSPS) for specific sources as promulgated by the EPA in 40 CFR 60 (including Subpart WWW). Because the source is subject to the requirements of 40 CFR 60, Subpart WWW (see below), it is subject to the requirements of this rule. Since Rule 8.1 does not establish any additional requirements not already included in Subpart WWW, the permit will not reference this rule.

40 CFR Part 60, Subpart A-General Provisions

The regulation applies to any affected facility that is subject to the NSPS regulations listed in the 40 CFR Part 60, Subpart A. Specifically, since the source is currently subject to the emission standards of Subpart WWW (60.752(b)(2)(iii)(B)), the source is subject to the requirements of Subpart A. However, because the landfill's proposed enclosed flare is not subject to the collection and control requirements of Subpart WWW, the District has not placed any Subpart A specific conditions on the permit.

40 CFR 60, Subpart Cc-Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills

As discussed for Rule 2.38, Subpart Cc establishes emission guidelines for existing MSW landfills (constructed or modified prior to May 30, 1991). As such, the landfill is not subject to the requirements of this subpart.

40 CFR Part 60, Subpart WWW-Standards of Performance for Municipal Solid Waste Landfills

The source is subject to the requirements of this regulation because the effective date for the facility's most recent modification to increase the landfill's design capacity is May 17, 1996 (see file). However, because the source's current annual NMOC mass emission rate does not exceed 50 Mg per year, the source will only be subject to the sampling, testing, and reporting requirements of the subpart. As discussed above, upon determining that the landfill NMOC emission rate is equal or greater than 50 Mg per year, Section 60.752(b)(2) of the subpart will require that the source install a compliant collection and control system.

Emission Sampling and Calculations Requirements: Specifically, under the most recent Tier 2 testing (NMOC Concentration), the landfill's site-specific NMOC emission rate is calculated to be below 50 Mg per year. The Tier 2 sampling and emission calculations appear to be in compliance with the requirements of Section 60.754(a)(1-4) (see file for emission reports).

Reporting Requirements: Section 60.752(b)(1)(i) requires that the source submit a yearly emissions report verifying that the landfill's NMOC mass emissions are below the 50 Mg per year threshold. Section 60.757(a) requires that the source submit an initial capacity design report, which contains: 1) A map (or plot) of the landfill and that identifies all the areas where waste is being landfilled, and 2) the maximum design capacity of the landfill. Section 60.757(b) requires that the source submit a NMOC emission rate report annually (or 5-year estimate as allowed by 40 CFR Part 60.757(b)(1)(ii)), and that all data, calculations, sample reports and measurements be submitted for review.

Records: Section 60.758(a) requires that the source document the design capacity report, the current amount of in-place waste, and the year-to-year waste acceptance rate. The records are to be kept on-site, readily accessible, and retained for at least five (5) years.

40 CFR Part 61, Subpart M-National Emission Standards for Asbestos

The source is subject to this subpart because they receive friable and non-friable asbestos containing waste from construction and demolition sources. The site's Waste Discharge Requirements (WDRs) issued on April 27, 2001, by the California Regional Water Quality Control Board (Order No. 5-01-101) allows the landfill to dispose of wastes containing greater than 1% of friable asbestos in waste cell Unit LF-1, Module DM-1. The order requires that the facility comply with all applicable state and federal requirements. Specifically, because the facility only disposes of the asbestos containing waste, it is subject to the requirements of Subpart M, Section 61.154.

Section 61.154(a) requires that there be no visible emissions to the outside air from any active waste disposal site where asbestos containing waste material has been deposited, except as allowed by Section 61.154(c) or (d). Because Section 61.154(b) pertains to fencing and warning sign requirements not specifically relating to air quality requirements, the conditions of the section will not be listed on the permit. Also, Sections 61.154(e), (i) and (j), require specific noticing and records be maintained on site covering the acceptance, disposal, and excavation of waste at the facility.

40 CFR Part 63, Subpart A-National Emission Standards for Hazardous Air Pollutants, General Provisions

This regulation establishes the general provisions for sources subject to the hazardous air pollutant (HAP) emission standards of 40 CFR Part 63. Because the source is not currently subject to the requirements of 40 CFR 63, Subpart AAAA, the general provisions of Subpart A do not currently apply.

40 CFR Part 63, Subpart AAAA-Municipal Solid Waste Landfills

This regulation establishes HAP emission standards for certain landfills. Per Section 63.1935, this subpart applies to all existing or new MSW landfills that have accepted waste since November 8, 1987, and that satisfy at least one of the following conditions:

- The landfill is a major source of HAPs that emits any single HAP above 10 tons per year, or any combination of HAPs above 25 tons per year (as defined in 40 CFR Part 63.2);
- The landfill is collocated with a major source of HAPs;
- The landfill is an area source with a design capacity equal to or greater than 2.5 million megagrams and an uncontrolled NMOC emission rate equal to or greater than 50 megagrams per year; or
- The landfill is an area source with a design capacity equal to or greater than 2.5 million megagrams and operates a bioreactor(s) (as defined in Section 63.1990).

Recology is not subject to the requirements of this subpart, since it:

- does not emit more than 10 tons of a single HAP, or 25 tons of any combination of HAPs;
- is not collocated with a major source of HAPs;
- has a design capacity above 2.5 million megagrams, but does not have an NMOC emission rate above the 50 Mg per year; and
- does not operate any bioreactor cells, and does not add any liquid to any waste cell that may represent a bioreactor operation.

Section 63.1990 of this subpart defines a bioreactor as "a MSW landfill or portion of a MSW landfill where any liquid other than leachate (leachate includes landfill gas condensate) is added in a controlled fashion into the waste mass (often in combination with re-circulating leachate) to reach a minimum average moisture content of at least 40% by weight, calculated on a wet weight basis, to accelerate or enhance the anaerobic (without oxygen) biodegradation of the waste." In order to assure that facility is not subject to this subpart, the District will prohibit the facility from adding liquid to any waste cells (see comment below).

40 CFR Part 82, Subpart F-Protection of Stratospheric Ozone

The source is subject to this subpart because the site accepts certain affected appliances and equipment containing ozone depleting substances. The subpart requires that these ozone depleting substances be properly removed and handled prior to the equipment being disposed of at the site. As such, the permit will list a condition that the facility comply with the requirements of this subpart.

COMMENTS:

The application does not trigger offsets or mitigation credit requirements. The application will require noticing per Title-V permitting requirements.

BACT is triggered for NOx and SOx emissions. Per BACT Determination 593-1, the equipment as proposed meets the BACT requirements for NOx for this class and category of source, and BACT is not cost effective for control of SOx emissions from the landfill flare..

To ensure the source's compliance with the findings of this evaluation, the following requirements will be placed on the permit as part of New Source Review (Rule 3.4):

Landfill Process Limit Restriction: The following conditions gives the site operational flexibility on a day-to-day basis, while limiting the amount of waste received per year.

- Solid waste throughput shall not exceed 1,200 tons per day, as averaged on a calendar week basis.

Flare Equipment Requirements:

- Only landfill gas shall be burned in the flare. No supplemental fuel may be burned in the flare, excluding pilot gas.

- The Permit Holder shall operate the enclosed flare with a minimum combustion zone residence time of 0.6 seconds, and shall equip the flare with automatic temperature controls designed to control the average minimum temperature, on a rolling 3-hour average basis, at or above the minimum temperature established in the initial startup testing. The enclosed flare shall also be equipped with an automatic shutoff gas valve and an automatic re-start system.

- The minimum flare operating temperature required to achieve compliance with the VOC emission concentration limit is 1380 degrees F. The flare combustion flame temperature shall be measured in units of degrees Fahrenheit (° F) and shall be monitored at the thermal couple in the exhaust stack determined through the initial source test. Flame temperature shall be monitored with a continuous reading temperature sensor.

- A non-resettable, totalizing gaseous fuel flow meter shall be installed and utilized to measure the quantity (in cubic feet) of landfill gas combusted in the flare. The meter shall be accurate to plus or minus five percent and shall be calibrated at least once every 12 months.

- The Permit Holder shall install and maintain such facilities on the flare stack as are necessary for sampling and testing purposes. The number, size, and location of sampling ports shall be in accordance with Air Resources Board Test Method 1. The location and access to the sampling platform shall be in accordance with the General Industry Safety Orders of the State of California.

Flare Emission Concentration Requirements:

- The emission concentrations for the flare shall not exceed the following:
 - a. VOC (measured as hexane): 31.4 ppmv @ 3% oxygen;
 - b. CO: 0.200 lb/MMBtu; and
 - c. NOx (as NO₂): 0.050 lb/MMBtu.

Flare Testing and Notification Requirements:

- The Permit Holder shall analyze the fuel's higher heating value (wet basis) at least every 12 months. The H₂S content of the landfill gas shall be tested once per month for use in calculating and recording the SO_x mass emissions. The SO_x mass emissions shall be calculated in a method approved by the District.

- The Permit Holder shall perform a source test on the flare within 90 days of startup and at least once every 12 months thereafter in order to demonstrate compliance with the VOC, CO, and NO_x emission limits.

- Source testing shall be conducted using the following test methods:

- a. VOC - EPA Method 18;
- b. CO - EPA Method 10 or CARB Method 100;
- c. NO_x (as NO₂) - EPA Method 7E or CARB Method 100; and
- d. Stack gas oxygen - EPA Method 3A or CARB Method 100.

Landfill Operating Requirements:

- The Permit Holder is prohibited from adding any liquid (other than leachate and landfill gas condensate) in a controlled fashion to any waste mass in order to accelerate or enhance the anaerobic biodegradation of the waste.

- Upon achieving a calculated NMOC emission rate of 50 megagrams or greater per year, the Permit Holder shall comply with the requirements of 40 CFR Part 60.752(b)(2). The landfill's NMOC emission rate shall be calculated in accordance with the requirements of 40 CFR Part 60.754(a).

- The Permit Holder shall comply with the applicable requirements for active disposal sites for asbestos-containing materials as set forth in 40 CFR Part 61, Subpart M - National Emission Standard for Asbestos. [40 CFR Part 61.140]

- The Permit Holder shall comply with the applicable requirements for the handling and the disposal of the affected appliances and equipment containing ozone depleting substances, as set forth in 40 CFR Part 82, Subpart F - Recycling and Emission Reduction. [40 CFR Part 82.150]

Testing Notification and Reporting:

- The Permit Holder shall submit a NMOC report to the District using the procedures specified in 40 CFR Part 60.754(a) at least once every twelve (12) months, except as provided in 40 CFR Part 60.757(b)(1)(ii) or 40 CFR Part 60.757(b)(3).

- The District must be notified prior to any emissions testing event (including NMOC related sampling or flare source testing) and a protocol must be submitted for approval 30 days prior to testing. The results of an emissions testing event shall be submitted to the District within 60 days of the test date. The protocol and report shall be mailed to the attention of the Supervising Air Quality Engineer.

Recordkeeping and Monitoring:

- The Permit Holder shall maintain a written log of all maintenance work performed that requires the shutdown of the gas collection system. The log shall include a description of work, the date work was performed, and the amount of time needed to complete the maintenance work. Emissions of landfill gas to the atmosphere shall be minimized during each shutdown.

- The Permit Holder shall monitor and record on a quarterly basis, the cumulative quarterly and annual landfill gas fuel usage (in cubic feet) from the totalizing meter serving the flare.

- The Permit Holder shall maintain daily records (in tons) of The total amount of MSW accepted at the landfill.

- The Permit Holder shall maintain all records on site for a period of five (5) years from the date of entry and these records shall be made readily available to District personnel upon request.

Administrative Cancellation of C-09-87 and C-10-07

- The District will administratively cancel Authority to Construct (ATC) C-09-87 and C-10-07 upon the implementation of ATC C-10-34 into Permit to Operate P-85-06(a3).

RECOMMENDATIONS:

Issue the Authority to Construct permit.

Engineer: _____

Date: _____

Reviewed by: _____

Date: _____

YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT

1947 Galileo Court, Suite 103; Davis, CA 95618

**New Source Review
Last Five Year Activity**

Evaluator: Courtney Graham

SIC Code # 4953

Facility Name: Recology Hay Road (formerly Norcal Waste Systems Hay Road Landfill, Inc.)

Date of Initial Determination: 04/23/2002

Date of Previous Determination: 01/28/2010

Date of Current Determination: 11/01/2010

Location: 6426 Hay Road; Vacaville, CA

Process	Issued Permits	Date PTO Issued	ATC	Date ATC Issued	VOC (tpy)	CO (tpy)	NOx (tpy)	SOx (tpy)	PM10 (tpy)
Gasoline Storage and Dispensing	P-28-98	07/27/1998	C-98-25	03/29/1998	0.01	0.00	0.00	0.00	0.00
Limited Use Diesel IC Engine (140 BHP)	P-34-00 ^a	06/21/2000	C-99-34	11/15/1999	-	-	-	-	-
Limited Use Diesel IC Engine (140 BHP)	P-35-00	-	C-99-33	11/16/1999	0.08	2.68	1.32	0.05	0.04
Limited Use Diesel fired IC Engine (250 BHP)	P-36-00	06/21/2000	C-99-25	11/16/1999	0.32	13.30	6.56	0.05	0.89
Emergency Diesel IC Engine (80 BHP)	P-37-00	06/21/2000	C-99-24	11/15/1999	0.02	0.05	0.25	0.02	0.02
Limited Use Diesel fired IC Engine (115 B HP)	P-24-00 ^a	06/21/2000	C-00-08	03/28/2000	-	-	-	-	-
Contaminated Soil Usage	P-64-00	12/15/2000	C-99-134	06/27/2000	13.00	0.00	0.00	0.00	0.82
Fugitive Landfill Gas Emissions	P-85-06	06/07/2007	C-05-88	03/02/2007	11.40	0.00	0.00	0.00	0.00
Emergency IC Engine (147 BHP)	P-86-06	06/07/2007	C-06-119	03/02/2007	0.01	0.03	0.13	0.01	0.00
Fugitive Landfill Gas Emissions	-	-	C-09-87 ^b	11/05/2009	-	-	-	-	-
Fugitive Landfill Gas Emissions	-	-	C-10-07 ^b	PENDING	-	-	-	-	-
Fugitive Landfill Gas Emissions	P-85-06(a2)	-	C-10-34 ^b	PENDING	0.00	39.95	9.99	27.20	3.36
TOTAL ^c					11.41	39.97	10.12	27.21	3.36

^a. Administrative permit holder name change from "Norcal Waste Systems Hay Road Landfill, Inc." to "Jepson Prairie Organics Compost" processed on 09/22/2006. The emissions from these permits are no longer associated with Norcal Waste's operation.

^b. As proposed, ATC C-10-34 modifies PTO P-85-06(a1) and will supersede ATC C-10-07 (which superceded ATC C-09-87).

^c. All decreases in PTE are treated as zero net change and not included in the Total 5-Year Aggregate summation.

COMMENTS: These permits are sorted by the ATC issuance date. According to Rule 3.4, Section 221, a major modification is calculated based on all creditable increases and decreases from the source over the period of five consecutive years before the application, including the calendar year of the most recent application. The applicable period ranges from November 2005 to the present date.

Engineer: _____

Date: _____

Reviewed by: _____

Date: _____

YOLO-SOLANO AIR QUALITY MANAGEMENT DISTRICT
1947 Galileo Court, Suite 103, Davis, CA 95618

New Source Review Quarterly Potential To Emit Determination

NSR Version 08/13/1998

Evaluation to be used on existing permits to obtain their quarterly PTE.

Engineer: Courtney Graham

SIC Code # 4953

Facility Name: Recology Hay Road (formerly Norcal Waste Systems Hay Road Landfill, Inc.)

Location: 6426 Hay Road, Vacaville, CA 95687

Date of Initial Quarterly PTE Determination: 4/23/2002

Date of Previous Quarterly PTE Determination: 01/28/2010

Date of Current Quarterly PTE Determination: 11/01/2010

CURRENT APPLICATIONS:

ATC's
C-10-34

PTO's

Process Description	Current Permits	VOC Emissions					CO Emissions					NOx Emissions					SOx Emissions					PM10 Emissions				
		QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)	QTR 1 (lbs)	QTR 2 (lbs)	QTR 3 (lbs)	QTR 4 (lbs)	Annual (TPY)
Gasoline Storage & Dispensing: Non-Retail	P-28-98	5	5	5	5	0.01	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00
Petroleum Contaminated Soil Operations	P-64-00	6,500	6,500	6,500	6,500	13,000	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00
Landfill Fugitive Emissions	P-85-06(a) ¹	16,958	17,147	17,335	17,335	34,39	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00	0	0	0	0	0.00
	C-10-34 ²	17,520	17,714	17,909	17,909	35,53	19,659	19,918	20,137	20,137	39,95	4,925	4,960	5,034	5,034	9,99	13,600	13,600	13,600	13,600	27,20	1,655	1,673	1,692	1,692	3,55
PRE-PROJECT SSPE ³ (lbs)		23,483	23,652	23,840	23,840	94,795	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	402	402	402	402	1,640
POST-PROJECT SSPE ³ (lbs)		24,025	24,219	24,414	24,414	97,072	19,659	19,918	20,137	20,137	78,981	4,925	4,980	5,034	5,034	19,973	13,600	13,600	13,600	13,600	54,400	2,057	2,075	2,094	2,094	8,351
Emergency IC Engine (150 BHP)	P-86-06	20	20	20	20	0.01	54	54	54	54	0.03	271	271	271	271	0.14	12	12	12	12	12	6	6	6	6	0.00
PRE-PROJECT TOTAL PTE ⁴		23,483	23,672	23,860	23,860	47,41	54	54	54	54	0.03	271	271	271	271	0.14	12	12	12	12	12	408	408	408	408	0.82
POST-PROJECT TOTAL PTE ⁴		24,045	24,239	24,434	24,434	48,55	19,753	19,972	20,191	20,191	39,97	5,166	5,251	5,305	5,305	10,12	13,612	13,612	13,612	13,612	54,400	2,063	2,081	2,099	2,099	4,18

¹ Per EPA's comments received on a similar project, the District has revised the PTE of PTO P-85-06(a1) to reflect the maximum permitted throughput (instead of the projected future throughput).

² As proposed, ATC C-10-34 modifies PTO P-85-06(a1) and will supercede ATC C-10-07, which superceded ATC C-09-87.

³ Per the requirements of Rule 3.20, the facility's pre- and post-project Stationary Source Potential to Emit (SSPE) calculations do not include any emissions from permitted emergency equipment.

⁴ The facility's pre- and post-project Total Potential to Emit (PTE) calculations include all permitted equipment operating at the site.

Post-Project Stationary Source Potential to Emit (SSPE)

	Quarter #1	Quarter #2	Quarter #3	Quarter #4	Yearly
VOC	24,025	24,219	24,414	24,414	97,072
CO	19,659	19,918	20,137	20,137	79,891
NOx	4,925	4,980	5,034	5,034	19,973
SOx	13,600	13,600	13,600	13,600	54,400
PM10	2,057	2,075	2,094	2,094	8,351

MITIGATION THRESHOLDS

Yearly
(lbs/year)
20,000
-
20,000
-
-

SSPE Comparison to Rule 3.20 Triggers

Annual
Above
-
Below
-
-

Post-Project Total Quarterly Potential to Emit (PTE)

	Quarter #1	Quarter #2	Quarter #3	Quarter #4	Yearly
VOC	24,045	24,239	24,434	24,434	48,55
CO	19,753	19,972	20,191	20,191	39,97
NOx	5,166	5,251	5,305	5,305	10,12
SOx	13,612	13,612	13,612	13,612	27,21
PM10	2,063	2,081	2,099	2,099	4,18

OFFSET THRESHOLDS

Quarterly
(lbs/quarter)
7,500
49,500
7,500
7,500
13,650

PTE Comparison to NSR Triggers

	Quarter #1	Quarter #2	Quarter #3	Quarter #4
Above	Above	Above	Above	Above
Below	Below	Below	Below	Below
Below	Below	Below	Below	Below
Below	Below	Below	Below	Below
Below	Below	Below	Below	Below

COMMENTS: This quarterly PTE evaluation was updated for ATC C-09-87.

Engineer:

Date:

Reviewed by:

Date: